

STABILIZATION WITH SUBSTITUTED UREAS AGAINST COLOR DEGRADATION OF PERSONAL CARE PRODUCTS

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BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The invention concerns personal care products having labile ingredients which are prevented from generating aesthetically displeasing color bodies.

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The Related Art

[0002] Color stability is an important aesthetic of personal care products. Some commonly formulated ingredients are susceptible to photo and/or oxidative degradation. Common among many of these ingredients is the presence of one or more unsaturated bonds. Structures with conjugated double and triple bonds (pi systems) are particularly vulnerable to generation of chromophoric color bodies.

[0003] The present invention seeks to provide a system which insures color stability in personal care products.

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SUMMARY OF THE INVENTION

[0004] A personal care composition is provided which includes:

5 (i) an unsaturated organic material with at least one olefinic double bond susceptible to degradation into a color bearing substance, the unsaturated material being selected from C₁₀-C₅₀ terpenoids and C₁₂-C₄₈ unsaturated fatty compounds, the C₁₂-C₄₈ compounds being selected from the group consisting of fatty alcohols, fatty acids, fatty acid glycerides, fatty acid salts and combinations thereof;

10 (ii) a substituted urea of general structure (I)



15 I

wherein R₁, R₂ and R₃ are selected from the group consisting of hydrogen, C₁-C₆ alkyl, (R₅)_nOH, and mixtures thereof; R₅ is methylene, ethylene, propylene or combinations thereof, and n ranges from 1 to 6; and R₄ is (R₅)_nOH; and

20 (iii) a cosmetically acceptable carrier.

DETAILED DESCRIPTION OF THE INVENTION

[0005] Now it has been found that certain types of unsaturated organic materials in personal care compositions can be preserved against degradation into visible color species. Materials requiring stabilization are those with at

5 least one olefinic double bond such as the C₁₀-C₅₀ terpenoids and the C₁₂-C₄₈ unsaturated fatty compounds. The latter include fatty alcohols, fatty acids, fatty acid salts, fatty acid glycerides and combinations thereof. Color inhibition is achieved through use of substituted ureas.

[0006] By the term personal care composition is meant any product applied to a

10 human body for improving appearance, cleansing, odor control or general aesthetics. Nonlimiting examples of personal care compositions include leave-on skin lotions and creams, shampoos, conditioners, shower gels, toilet bars, antiperspirants, deodorants, dental products, shave creams, depilatories, lipsticks, foundations, mascara, sunless 15 tanners and sunscreen lotions.

[0007] An important element of the present invention is the color stabilization agent. This is a substituted urea having general structure (I)



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I

wherein R₁, R₂ and R₃ are selected from the group consisting of hydrogen, C₁-C₆ alkyl, (R₅)_nOH, and mixtures thereof; R₅ is methylene, ethylene, propylene or combinations thereof, and n ranges from 1 to 6; and R₄ is (R₅)_nOH.

5 [0008] Illustrative species of the substituted urea are hydroxymethyl urea, hydroxyethyl urea, hydroxypropyl urea; bis(hydroxymethyl) urea; bis(hydroxyethyl) urea; bis(hydroxypropyl) urea; N,N'-di-hydroxymethyl urea; N,N'-di-hydroxyethyl urea; N,N'-di-hydroxypropyl urea; N,N,N'-tri-hydroxyethyl urea; tetra(hydroxymethyl) urea; tetra(hydroxyethyl) urea; tetra(hydroxypropyl) urea; N-methyl-N'- hydroxyethyl urea; N-ethyl-N'- hydroxyethyl urea; N-hydroxypropyl-N'- hydroxyethyl urea and N,N'- dimethyl-N-hydroxyethyl urea. Where the term hydroxypropyl appears, the meaning is generic for either 3-hydroxy-n-propyl, 2-hydroxy-n-propyl, 3-hydroxy-i-propyl or 2-hydroxy-i-propyl radicals. Most preferred is hydroxyethyl urea. The latter is available as a 50% aqueous liquid from the National Starch & Chemical Division of ICI under the trademark Hydrovance.

10 [0009] Amounts of the substituted urea may range from about 0.01 to about 20%, preferably from about 0.1 to about 10%, more preferably from about 1 to about 8%, and optimally from about 3 to about 6% by weight of the composition.

15 [00010] Components of the personal care compositions susceptible to color degradation are materials which have at least one olefinic bond, and particularly those with at least 2, 3 or 4 olefinic bonds. Especially susceptible to color producing bodies are those compounds where the

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olefin bond is conjugated with other olefin, alkyne or aromatic pi bonded systems.

[00011] Unsaturated fatty acid or alcohol derivatives may be susceptible to color body formation. By the term fatty is meant an alkyl chain length from C₁₂ 5

to C₄₈, most often from C₁₂ to C₂₄. Typical fatty acids of this category are oleic acid, linoleic acid, linolenic acid, ricinoleic acid, elaidic acid, petroselenic acid, erucic acid, palmitoleic acid, myristoleic acid and 12-hydroxyoleic acid. Most common of the aforementioned fatty acids are oleic acid, linoleic acid, linolenic acid and ricinoleic acid. Exemplative 10 unsaturated fatty alcohols include oleyl alcohol, linoleyl alcohol, linolenyl alcohol and mixtures thereof. Among the salts are the sodium, ammonium, potassium and triethanolammonium fatty acid salts.

Illustrative but not limiting are salts such as sodium oleate, potassium 15 oleate, ammonium oleate, triethanolammonium oleate, sodium linolenate, potassium linolenate, ammonium linolenate and triethanolammonium linolenate. Longer chain unsaturated fatty alcohols and acids are illustrated by a group generically known as conjugated linoleic acids.

[00012] Conjugated linoleic acids (referred to as CLA) are illustrative of 20 polyunsaturated compounds of the present invention susceptible to color body formation. These comprise a group of positional and geometric

isomers of linoleic acid in which various configurations of cis and trans double bonds at positions (6,8), (7,9), (8,10), (9,11), (10, 12) or (11, 13) are possible. Thus, twenty-four different isomers of CLA exist.

Conjugated is a term meaning adjacent pairs of double bonds forming an 25 extended pi orbital system.

[00013] Glycerides are a further category of the unsaturated fatty compounds. These may be mono- di- or tri- glycerides. One, two or three of the fatty acid chains esterified to the glycerol are unsaturated. Nonlimiting examples of glycerides include sunflowerseed oil, soybean oil, olive oil, cottonseed oil, groundnut oil, shea nut oil, palm oil, cocoa butter, illipe, borage and borage seed oil, coriander seed oil, linseed oil and mixtures thereof.

[00014] Terpenoids are another category of unsaturated organic materials according to the present invention. Terpenoids may be further divided into classes such as alcohols, ethers, aldehydes, acetals, acids, ketones, ester and terpene compounds that contain hetero atoms such as nitrogen or sulphur. The tables which follow describe illustrative but not limiting examples.

TABLE 1. Acyclic Terpenoids

15 HYDROCARBONS
Myrcene
Ocimene
beta-Farnesene

20 ALCOHOLS
Dihydromyrcenol (2,6-dimethyl-7-octen-2-ol)
Geraniol (3,7-dimethyl-*trans*-2,6-octadien-1-ol)
Nerol (3,7-dimethyl-*cis*-2,6-octadien-1-ol)
25 Linalool (3,7-dimethyl-1,6-octadien-3-ol)
Myrcenol (2-methyl-6-methylene-7-octen-2-ol)

Lavandulol

Citronellol (3,7-dimethyl-6-octen-1-ol)

Trans-trans-Farnesol (3,7,11-trimethyl-2,6,10-dodecatrien-1-ol)

Trans-Nerolidol (3,7,11-trimethyl-1,6,10-dodecatrien-3-ol)

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ALDEHYDES AND ACETALS

Citral (3,7-dimethyl-2,6-octadien-1-al)

Citral diethyl acetal (3,7-dimethyl-2,6-octadien-1-al diethyl acetal)

Citronellal (3,7-dimethyl-6-octen-1-al)

10 Citronellyloxyacetraldehyde

2,6,10-Trimethyl-9-undecenal

KETONES

Tagetone

15 Solanone

Geranylacetone (6,10-dimethyl-5,9-undecadien-2-one)

ACIDS AND ESTERS

Cis-Geranic acid

20 Citronellic acid

Geranyl Esters, including Geranyl formate, Geranyl acetate, Geranyl propionate,
Geranyl isobutyrate, Geranyl isovalerate

Neryl Esters, including Neryl acetate

Linalyl Esters, including Linalyl formate, Linalyl acetate, Linalyl propionate,
25 Linalyl butyrate, Linalyl isobutyrate,

Lavandulyl Esters, including Lavendulyl acetate

Citronellyl Esters, including Citronellyl formate, Citronellyl acetate, Citronellyl propionate, Citronellyl isobutyrate, Citronellyl isovalerate, Citronellyl tiglate

5 NITROGEN CONTAINING UNSATURATED TERPENE DERIVATIVES

Cis-Geranic acid nitrile

Citronellic acid nitrile

TABLE 2. Cyclic Terpenoids

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HYDROCARBONS

Limonene (1,8-*p*-menthadiene)

Alpha-Terpinene

Gamma-Terpinene (1,4-*p*-menthadiene)

15 Terpinolene

Alpha-Phellandrene (1,5-*p*-menthadiene)

Beta-Phellandrene

Alpha-Pinene (2-pinene)

Beta-Pinene (2(10)-pinene)

20 Camphene

3-Carene

Caryophyllene

(+)-Valencene

Thujopsene

25 Alpha-Cedrene

Beta-Cedrene

Longifolene

ALCOHOLS AND ETHERS

(+)-Neoiso-isopulegol

| | | |
|----|-----------------|----------------------------|
| 5 | Isopulegol | (8- <i>p</i> -menten-3-ol) |
| | Alpha-Terpineol | (1- <i>p</i> -menten-8-ol) |
| | Beta-Terpineol | |
| | Gamma-Terpineol | |
| | Delta-Terpineol | |
| 10 | 1-Terpinen-4-ol | (1- <i>p</i> -menten-4-ol) |

ALDEHYDES AND KETONES

| | | |
|----|---|---|
| | Carvone | (1,8- <i>p</i> -mentadien-6-one) |
| 15 | Alpha-Ionone | (C ₁₃ H ₂₀ O) |
| | Beta-Ionone | (C ₁₃ H ₂₀ O) |
| | Gamma-Ionone | (C ₁₃ H ₂₀ O) |
| | Irone, alpha-, beta-, gamma- | (C ₁₄ H ₂₂ O) |
| | <i>n</i> -Methylionone, alpha-, beta-, gamma- | (C ₁₄ H ₂₂ O) |
| 20 | Isomethylionone, alpha-, beta-, gamma- | (C ₁₄ H ₂₂ O) |
| | Allylionone | (C ₁₆ H ₂₄ O) |
| | Pseudoionone | |
| | <i>n</i> -Methylpseudoionone | |
| | Isomethylpseudoionone | |
| 25 | Damascones | 1-(2,6,6-trimethylcyclohexenyl)-2-buten-1-ones |
| | Including beta-Damascenone | 1-(2,6,6-trimethyl-1,3-cyclohexadienyl)-2-buten-1-one |

| | | |
|----|--------------------------------|--|
| | Nootkatone | 5,6-dimethyl-8-isopropenylbicyclo[4.4.0]-1-decen-3-one |
| 5 | Cedryl methyl ketone ESTERS | (C ₁₇ H ₂₆ O) |
| | Alpha-Terpinal acetate | (1- <i>p</i> -menthen-8-yl acetate) |
| 10 | Nopyl acetate acetate | (-)-2-(6,6-dimethylbicyclo[3.1.1]hept-2-en-2-yl)ethyl |
| | Khusymil acetate | |

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Table 3. Cycloaliphatic Compounds Structurally Related to Terpenes

ALCOHOLS

20 5-(2,2,3-Trimethyl-3-cyclopenten-1-yl)-3-methylpentan-2-ol

ALDEHYDES

2,4-Dimethyl-3-cyclohexene carboxaldehyde

4-(4-Methyl-3-penten-1-yl)-3-cyclohexene carboxaldehyde

25 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene carboxaldehyde

KETONES

Civetone

Dihydrojasmone (3-methyl-2-pentyl-2-cyclopenten-1-one)

30 Cis-Jasmone 3-methyl-2-(2-*cis*-penten-1-yl)-2-cyclopenten-1-one

5-Cyclohexadecen-1-one

2,3,8,8-Tetramethyl-1,2,3,4,5,6,7,8-octahydro-2-naphthalenyl methyl ketone

3-methyl-2-cyclopenten-2-ol-1-one

ESTERS

4,7-Methano-3a,4,5,6,7,7a-hexahydro-5-(or 6)-indenyl acetate

Allyl 3-cyclohexylpropionate Methyl dihydrojasmonate methyl (3-oxo-2-pentylcyclopentyl)acetate.

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[00015] Another subclass of the terpenoids category are the sterols. Examples are betulin (betulinic acid and alcohol), cholesterol, sitosterol, ergosterol, stigmasterol, and linosterol.

[00016] Amounts of the unsaturated material which may lead to color formation may range from about 0.0001 to about 20%, usually from about 0.001 to about 10%, more usually from about 0.1 to about 5% by weight.

[00017] Advantageously but not necessarily the amount of the substituted urea relative to the unsaturated material ranges in weight from about 10,000:1 to about 1:100, preferably from about 1,000:1 to about 1:10, more preferably from about 500:1 to about 1:5, optimally from about 100:1 to about 10:1.

[00018] Certain types of unsaturated material of the present invention can be characterized by an Iodine Value ranging from about 20 to about 300, preferably from about 30 to about 200, optimally from about 50 to about 150. Iodine Values are often associated with fatty compounds such as the fatty acids, alcohols, salts and glycerides.

[00019] Compositions of this invention will also include a cosmetically acceptable carrier. Amounts of the carrier may range from about 1 to about 99.9%, preferably from about 70 to about 95%, optimally from about 80 to about

90% by weight of the composition. Among the useful carriers are water, saturated emollients, saturated fatty acids, saturated fatty alcohols, humectants, thickeners and combinations thereof. The carrier may be aqueous, anhydrous or an emulsion. Preferably the compositions are 5 aqueous, especially water and oil emulsions of the W/O or O/W or triplex W/O/W variety. Water when present may be in amounts ranging from about 5 to about 95%, preferably from about 20 to about 70%, optimally from about 35 to about 60% by weight.

[00020] Emollient materials may serve as cosmetically acceptable carriers. 10 These may be in the form of silicone oils, synthetic esters and hydrocarbons. Amounts of the emollients may range anywhere from about 0.1 to about 95%, preferably between about 1 and about 50% by weight of the composition.

[00021] Silicone oils may be divided into the volatile and nonvolatile variety. The 15 term "volatile" as used herein refers to those materials which have a measurable vapor pressure at ambient temperature. Volatile silicone oils are preferably chosen from cyclic (cyclomethicone) or linear polydimethylsiloxanes containing from 3 to 9, preferably from 4 to 5, silicon atoms.

20 [00022] Nonvolatile silicone oils useful as an emollient material include polyalkyl siloxanes, polyalkylaryl siloxanes and polyether siloxane copolymers. The essentially nonvolatile polyalkyl siloxanes useful herein include, for example, polydimethyl siloxanes with viscosities of from about 5×10^{-6} to $0.1 \text{ m}^2/\text{s}$ at 25°C. Among the preferred nonvolatile emollients useful in

the present compositions are the polydimethyl siloxanes having viscosities from about 1×10^{-5} to about $4 \times 10^{-4} \text{ m}^2/\text{s}$ at 25°C.

[00023] Another class of nonvolatile silicones are emulsifying and non-emulsifying silicone elastomers. Representative of this category is
5 Dimethicone/Vinyl Dimethicone Crosspolymer available as Dow Corning 9040, General Electric SFE 839, and Shin-Etsu KSG-18. Silicone waxes such as Silwax WS-L (Dimethicone Copolyol Laurate) may also be useful.

[00024] Among the ester emollients are:

10 1) Alkyl esters of saturated fatty acids having 10 to 24 carbon atoms. Examples thereof include behenyl neopentanoate, isononyl isonanonoate, isopropyl myristate and octyl stearate.

15 2) Ether-esters such as fatty acid esters of ethoxylated saturated fatty alcohols.

20 3) Polyhydric alcohol esters. Ethylene glycol mono and di-fatty acid esters, diethylene glycol mono- and di-fatty acid esters, polyethylene glycol (200-6000) mono- and di-fatty acid esters, propylene glycol mono- and di-fatty acid esters, polypropylene glycol 2000 monostearate, ethoxylated propylene glycol monostearate, glyceryl mono- and di-fatty acid esters, polyglycerol poly-fatty esters, ethoxylated glyceryl mono-stearate, 1,3-butylene glycol monostearate, 1,3-butylene glycol distearate, polyoxyethylene polyol fatty acid ester, sorbitan fatty

acid esters, and polyoxyethylene sorbitan fatty acid esters are satisfactory polyhydric alcohol esters. Particularly useful are pentaerythritol, trimethylolpropane and neopentyl glycol esters of C₁-C₃₀ alcohols.

- 5 4) Wax esters such as beeswax, spermaceti wax and tribehenin wax.
- 5) Sugar ester of fatty acids such as sucrose polybehenate and sucrose polycottonseedate.

10 [00025] Hydrocarbons which are suitable cosmetically acceptable carriers include petrolatum, mineral oil, C₁₁-C₁₃ isoparaffins, and especially isohexadecane, available commercially as Permethyl 101A from Presperse Inc.

15 [00026] Saturated fatty acids having from 10 to 30 carbon atoms may also be suitable as cosmetically acceptable carriers. Illustrative of this category are pelargonic, lauric, myristic, palmitic, stearic, isostearic, hydroxystearic and behenic acids.

20 [00027] Fatty alcohols having from 10 to 30 carbon atoms are another useful category of cosmetically acceptable carrier. Illustrative of this category are stearyl alcohol, lauryl alcohol, myristyl alcohol and cetyl alcohol.

20 [00028] Humectants of the polyhydric alcohol-type can be employed as cosmetically acceptable carriers. Typical polyhydric alcohols include glycerol, polyalkylene glycols and more preferably alkylene polyols and

their derivatives, including propylene glycol, dipropylene glycol, polypropylene glycol, polyethylene glycol and derivatives thereof, sorbitol, hydroxypropyl sorbitol, hexylene glycol, 1,3-butylene glycol, isoprene glycol, 1,2,6-hexanetriol, ethoxylated glycerol, propoxylated glycerol and mixtures thereof. The amount of humectant may range anywhere from 5 0.5 to 50%, preferably between 1 and 15% by weight of the composition.

[00029] Thickeners can be utilized as part of the cosmetically acceptable carrier of compositions according to the present invention. Typical thickeners include crosslinked acrylates (e.g. Carbopol 982®), hydrophobically-modified acrylates (e.g. Carbopol 1382®), cellulosic derivatives and natural gums. Among useful cellulosic derivatives are sodium carboxymethylcellulose, hydroxypropyl methocellulose, hydroxypropyl cellulose, hydroxyethyl cellulose, ethyl cellulose and hydroxymethyl cellulose. Natural gums suitable for the present invention include guar, 10 xanthan, sclerotium, carrageenan, pectin and combinations of these gums. Inorganics may also be utilized as thickeners, particularly clays such as bentonites and hectorites, fumed silicas, and silicates such as magnesium aluminum silicate (Veegum®). Amounts of the thickener 15 may range from 0.0001 to 10%, usually from 0.001 to 1%, optimally from 0.01 to 0.5% by weight of the composition.

[00030] Personal care compositions of the present invention may be in any form. These forms may include lotions, creams, roll-on formulations, sticks, 20 mousses, aerosol and non-aerosol sprays and fabric (e.g. nonwoven textile)-applied formulations.

[00031] Surfactants may also be present in compositions of the present invention. Total concentration of the surfactant when present may range from about 0.1 to about 40%, preferably from about 1 to about 20%, optimally from about 1 to about 5% by weight of the composition. The surfactant may be selected from the group consisting of anionic, nonionic, cationic and amphoteric actives. Particularly preferred nonionic surfactants are those with a C₁₀-C₂₀ fatty alcohol or acid hydrophobe condensed with from 2 to 100 moles of ethylene oxide or propylene oxide per mole of hydrophobe; C₂-C₁₀ alkyl phenols condensed with from 2 to 20 moles of alkylene oxide; mono- and di-fatty acid esters of ethylene glycol; fatty acid monoglyceride; sorbitan, mono- and di- C₈-C₂₀ fatty acids; and polyoxyethylene sorbitan as well as combinations thereof. Alkyl polyglycosides and saccharide fatty amides (e.g. methyl gluconamides) are also suitable nonionic surfactants.

[00032] Preferred anionic surfactants include soap, alkyl ether sulfates and sulfonates, alkyl sulfates and sulfonates, alkylbenzene sulfonates, alkyl and dialkyl sulfosuccinates, C₈-C₂₀ acyl isethionate, C₈-C₂₀ alkyl ether phosphates, C₈-C₂₀ sarcosinates and combinations thereof.

[00033] Sunscreen actives may also be included in compositions of the present invention. Particularly preferred are such materials as ethylhexyl p-methoxycinnamate, available as Parsol MCX®, Avobenzene, available as Parsol 1789® and benzophenone-3, also known as Oxybenzone. Inorganic sunscreen actives may be employed such as microfine titanium dioxide, zinc oxide, polyethylene and various other polymers. Amounts of the sunscreen agents when present may generally range from 0.1 to

30%, preferably from 2 to 20%, optimally from 4 to 10% by weight of the composition.

[00034] Preservatives can desirably be incorporated into the cosmetic compositions of this invention to protect against the growth of potentially harmful microorganisms. Suitable traditional preservatives for compositions of this invention are alkyl esters of para-hydroxybenzoic acid. Other preservatives which have more recently come into use include hydantoin derivatives, propionate salts, and a variety of quaternary ammonium compounds. Cosmetic chemists are familiar with appropriate preservatives and routinely choose them to satisfy the preservative challenge test and to provide product stability. Particularly preferred preservatives are phenoxyethanol, methyl paraben, propyl paraben, imidazolidinyl urea, sodium dehydroacetate and benzyl alcohol. The preservatives should be selected having regard for the use of the composition and possible incompatibilities between the preservatives and other ingredients in the emulsion. Preservatives are preferably employed in amounts ranging from 0.01% to 2% by weight of the composition.

[00035] Compositions of the present invention may include vitamins. Illustrative vitamins are Vitamin A (retinol), Vitamin B₂, Vitamin B₃ (niacinamide), Vitamin B₆, Vitamin C, Vitamin E and Biotin. Derivatives of the vitamins may also be employed. For instance, Vitamin C derivatives include ascorbyl tetraisopalmitate, magnesium ascorbyl phosphate and ascorbyl glycoside. Derivatives of Vitamin E include tocopheryl acetate, tocopheryl palmitate and tocopheryl linoleate. DL-panthenol and derivatives may also be employed. For purposes of this invention, vitamins where present are not considered as unsaturated materials.

Total amount of vitamins when present in compositions according to the present invention may range from 0.001 to 10%, preferably from 0.01% to 1%, optimally from 0.1 to 0.5% by weight of the composition.

[00036] Another type of useful substance can be that of an enzyme such as 5 oxidases, proteases, lipases and combinations. Particularly preferred is superoxide dismutase, commercially available as Biocell SOD from the Brooks Company, USA.

[00037] Skin lightening compounds may be included in the compositions of the invention. Illustrative substances are placental extract, lactic acid, 10 niacinamide, arbutin, kojic acid, ferulic acid, resorcinol and derivatives including 4-substituted resorcinols and combinations thereof. Amounts of these agents may range from about 0.1 to about 10%, preferably from about 0.5 to about 2% by weight of the composition.

[00038] Desquamation promoters may be present. Illustrative are the alpha- 15 hydroxycarboxylic acids and beta-hydroxycarboxylic acids. The term "acid" is meant to include not only the free acid but also salts and C₁-C₃₀ alkyl or aryl esters thereof and lactones generated from removal of water to form cyclic or linear lactone structures. Representative acids are glycolic, lactic and malic acids. Salicylic acid is representative of the beta-hydroxycarboxylic acids. Amounts of these materials when present 20 may range from about 0.01 to about 15% by weight of the composition.

[00039] A variety of herbal extracts may optionally be included in compositions of this invention. The extracts may either be water soluble or water-insoluble carried in a solvent which respectively is hydrophilic or hydrophobic. Water and ethanol are the preferred extract solvents.

5 [00040] Also included may be such materials as lipoic acid, retinoxytrimethylsilane (available from Clariant Corp. under the Silcare 1M-75 trademark), dehydroepiandrosterone (DHEA) and combinations thereof. Ceramides (including Ceramide 1, Ceramide 3, Ceramide 3B and Ceramide 6) as well as pseudoceramides may also be utilized for many compositions of the present invention but may also be excluded.

10 For purposes of this invention, materials of this paragraph are not considered as unsaturated materials. Amounts of these materials may range from about 0.000001 to about 10%, preferably from about 0.0001 to about 1% by weight of the composition.

15 [00041] Colorants, opacifiers and abrasives may also be included in compositions of the present invention. Each of these substances may range from about 0.05 to about 5%, preferably between 0.1 and 3% by weight of the composition.

20 [00042] The compositions of the present invention can also be, optionally, incorporated into an insoluble substrate for application to the skin such as in the form of a treated wipe.

[00043] The term "comprising" is meant not to be limiting to any subsequently stated elements but rather to encompass non-specified elements of major or minor functional importance. In other words the listed steps,

elements or options need not be exhaustive. Whenever the words “including” or “having” are used, these terms are meant to be equivalent to “comprising” as defined above.

5 [00044] Except in the operating and comparative examples, or where otherwise explicitly indicated, all numbers in this description indicating amounts of material ought to be understood as modified by the word “about”.

[00045] All documents referred to herein, including all patents, patent applications, and printed publications, are hereby incorporated by reference in their entirety in this disclosure.

10 [00046] The following examples will more fully illustrate the embodiments of this invention. All parts, percentages and proportions referred to herein and in the appended claims are by weight unless otherwise illustrated.

EXAMPLE 1

15 [00047] A representative personal care composition of the present invention in the form of a cosmetic lotion is outlined under Table I.

TABLE I

| INGREDIENT | WEIGHT % |
|------------------------------------|----------|
| PHASE A | |
| Water | Balance |
| Disodium EDTA | 0.05 |
| Methyl Paraben | 0.15 |
| Magnesium Aluminum Silicate | 0.60 |
| Triethanolamine | 1.20 |
| Hydroxyethyl Urea | 1.00 |
| PHASE B | |
| Xanthan Gum | 0.20 |
| Natrosol® 250HHR (ethyl cellulose) | 0.50 |
| Butylene Glycol | 3.00 |
| Glycerin | 2.00 |
| PHASE C | |
| Sodium Stearoyl Lactylate | 0.10 |
| Glycerol Monostearate | 1.50 |
| Stearyl Alcohol | 1.50 |
| Isostearyl Palmitate | 3.00 |
| Silicone Fluid | 1.00 |
| Cholesterol | 0.25 |
| Sorbitan Stearate | 1.00 |
| Butylated Hydroxy Toluene | 0.05 |
| Vitamin E Acetate | 0.01 |
| PEG-100 Stearate | 2.00 |
| Stearic Acid | 3.00 |
| Propyl Paraben | 0.10 |
| Parsol MCX® | 2.00 |
| Caprylic/Capric Triglyceride | 0.50 |
| Hydroxycaprylic Acid | 0.01 |
| C12-15 Alkyl Octanoate | 3.00 |
| PHASE D | |
| Vitamin A Palmitate | 0.10 |
| Bisabolol | 0.01 |
| Vitamin A Acetate | 0.01 |
| Fragrance | 0.03 |
| Retinol 50C | 0.02 |
| Conjugated Linoleic Acid | 0.50 |

EXAMPLE 2

[00048] A water-in-oil topical liquid make-up foundation according to invention is described in Table II below.

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TABLE II

| INGREDIENT | WEIGHT % |
|-----------------------------|----------|
| PHASE A | |
| Cyclomethicone | 9.25 |
| Oleyl Oleate | 2.00 |
| Dimethicone Copolyol | 20.00 |
| PHASE B | |
| Talc | 3.38 |
| Pigment (Iron Oxides) | 10.51 |
| Spheron L-1500 (Silica) | 0.50 |
| PHASE C | |
| Synthetic Wax Durachem 0602 | 0.10 |
| Arachidyl Behenate | 0.30 |
| PHASE D | |
| Cyclomethicone | 1.00 |
| Trihydroxystearin | 0.30 |
| PHASE E | |
| Laureth-7 | 0.50 |
| Propyl Paraben | 0.25 |
| PHASE F | |
| Fragrance | 0.05 |
| PHASE G | |
| Water | balance |
| Hydroxymethyl Urea | 3.00 |
| Methyl Paraben | 0.12 |
| Propylene Glycol | 8.00 |
| Niacinamide | 4.00 |
| Glycerin | 3.00 |
| Sodium Chloride | 2.00 |
| Sodium Dehydroacetate | 0.30 |

EXAMPLE 3

[00049] Illustrated herein is a skin cream with unsaturated material(linseed oil) incorporating a substituted urea of the present invention.

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TABLE III

| INGREDIENT | WEIGHT % |
|-----------------------------|----------|
| Glycerin | 6.93 |
| Niacinamide | 5.00 |
| Hydroxyethyl Urea | 5.00 |
| Permethyl 101A ¹ | 3.00 |
| Sepigel 305 ² | 2.50 |
| Q2-1403 ³ | 2.00 |
| Linseed Oil | 1.33 |
| Arlatone 2121 ⁴ | 1.00 |
| Cetyl Alcohol CO-1695 | 0.72 |
| SEFA Cottonate ⁵ | 0.67 |
| Tocopherol Acetate | 0.50 |
| Panthenol | 0.50 |
| Stearyl Alcohol | 0.48 |
| Titanium Dioxide | 0.40 |
| Disodium EDTA | 0.10 |
| Glydant Plus ⁶ | 0.10 |
| PEG-100 Stearate | 0.10 |
| Stearic Acid | 0.10 |
| Purified Water | Balance |

¹ Isohexadecane, Presperse Inc., South Plainfield, NJ

² Polyacrylamide(and)C13-14 Isoparaffin(and) Laureth-7, Seppic Corporation, Fairfield, NJ

³ dimethicone(and)dimethiconol, Dow Corning Corp. Midland, MI

10 ⁴ Sorbitan Monostearate and Sucrococoate, ICI Americas Inc., Wilmington, DE

⁵ Sucrose ester of fatty acid

⁶ DMDM Hydantoin (and) Iodopropynyl Butylcarbamate, Lonza Inc., Fairlawn, NJ

EXAMPLE 4

[00050] Illustrative of another cosmetic composition with unsaturated material (sunflowerseed oil) incorporating a substituted urea according to the 5 present invention is the formula of Table IV.

TABLE IV

| INGREDIENT | WEIGHT % |
|----------------------------------|----------|
| Polysilicone-11 | 22 |
| Cyclomethicone | 54 |
| Petrolatum | 11 |
| Hydroxyethyl Urea (50% in water) | 7 |
| Dimethicone Copolyol | 0.5 |
| Sunflowerseed Oil | 0.5 |

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EXAMPLE 5

[00051] A relatively anhydrous composition with unsaturated material (borage 15 seed oil) and a substituted urea according to the present invention is reported in Table V.

TABLE V

| INGREDIENT | WEIGHT % |
|----------------------------------|----------|
| Cyclomethicone | 80.65 |
| Dimethicone | 9.60 |
| Squalane | 6.00 |
| Isostearic Acid | 1.90 |
| Borage Seed Oil | 0.90 |
| Hydroxyethyl Urea (50% in water) | 0.50 |
| Retinyl Palmitate | 0.25 |
| Ceramide 6 | 0.10 |
| Tocopherol | 0.10 |

EXAMPLE 6

5 [00052] An aerosol packaged foaming cleanser with unsaturated material (sunflower seed oil and polyglycero-4-oleate) protected with a substituted urea suitable for the present invention is outlined in Table VI.

TABLE VI

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| INGREDIENT | WEIGHT % |
|---|----------|
| Sunflower Seed Oil | 20.00 |
| Maleated Soybean Oil | 5.00 |
| Silicone Urethane | 1.00 |
| Polyglycero-4 Oleate | 1.00 |
| Sodium C14-16 Olefin Sulfonate | 15.00 |
| Sodium Lauryl Ether Sulphate (25% active) | 15.00 |
| Cocoamidopropylbetaine | 15.00 |
| DC 1784® (Silicone Emulsion 50%) | 5.00 |
| Polyquaternium-11 | 1.00 |
| Hydroxyethyl Urea (50% in Water) | 1.00 |
| Water | Balance |

EXAMPLE 7

[00053] A disposable, single use personal care towelette product is described according to the present invention. A 70/30 polyester/rayon non-woven towelette is prepared with a weight of 1.8 grams and dimensions of 15 cm by 20 cm. Onto this towelette is impregnated a composition with an unsaturated material (terpenoid fragrance) protected against discoloration by a substituted urea as outlined in Table VII below.

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TABLE VII

| INGREDIENT | WEIGHT % |
|----------------------------------|----------|
| Hydroxyethyl Urea (50% in Water) | 7.50 |
| Glycerin | 2.00 |
| Hexylene Glycol | 2.00 |
| Disodium Capryl Amphodiacetate | 1.00 |
| Gluconolactone | 0.90 |
| Silicone Microemulsion | 0.85 |
| Witch Hazel | 0.50 |
| PEG-40 Hydrogenated Castor Oil | 0.50 |
| Fragrance (Terpenoid Mixture) | 0.20 |
| Vitamin E Acetate | 0.001 |
| Water | Balance |

EXAMPLE 8

[00054] Experiments were conducted to evaluate the color stabilizing activity of a typical substituted urea. A series of skin creams containing a relatively substantial amount of conjugated linoleic acid (color former) were prepared with the components listed in Table VIII.

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TABLE VIII

| INGREDIENTS | SAMPLE (WEIGHT %) | | | | |
|---|-------------------|---------|---------|---------|---------|
| | A | B | C | D | E |
| Glycerin | 20.00 | 10.00 | 15.00 | 10.00 | 10.00 |
| Hydroxyethyl Urea (50% Active in Water) | -- | 10.00 | -- | 5.00 | -- |
| Silicone/Clay | 5.50 | 5.50 | 5.50 | 5.50 | 5.50 |
| Conjugated Linoleic Acid | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Cholesterol | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| Linoleic Acid | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| Stearic Acid | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Dermoblock OS® | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Cyclopentasiloxane | 13.00 | 13.00 | 13.00 | 13.00 | 13.00 |
| Silicone Elastomer (DC 9045®) | 13.00 | 13.00 | 13.00 | 13.00 | 13.00 |
| Dimethicone | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Glycolic Acid (70% Active) | 5.70 | 5.70 | 5.70 | 5.70 | 5.70 |
| Ammonium Hydroxide | 1.60 | 1.60 | 1.60 | 1.60 | 1.60 |
| Titanium Dioxide | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| Nutrient Components | 1.60 | 1.60 | 1.60 | 1.60 | 1.60 |
| Fragrance | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 |
| Sodium Chloride | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| Disodium EDTA | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| Methyl Paraben | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| Propyl Paraben | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| Water | Balance | Balance | Balance | Balance | Balance |

[00055] All of the samples were stored in beakers under normal indoor conditions. They were exposed at room temperature to mixed lighting of natural and fluorescent light. Discoloration or the development of

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color bodies in the creams were noted after 2 months storage. A standard color chart for stability tests was used to evaluate the amount of color generated. Ratings ran from 1 to 20. On the color rating chart, 1 is white; continuous color increases to very slightly yellow (natural to light beige rated at 2-5); slightly yellow (light beige to beige rated at 6-10); yellow (rated at 11-15); and bright yellow (rated at 16-20). Color rating results after the 2 month storage are reported in the Table below.

TABLE IX

| INGREDIENT | SAMPLE (WEIGHT %) | | | | |
|--------------------------|-------------------|-------|---------------|-------|--------|
| | A | B | C | D | E |
| Color Rating Chart Score | 16 | 8 | 16 | 9 | 15 |
| Overall Visual Effect | Bright yellow | Beige | Bright yellow | Beige | Yellow |

10 [00056] Based on results reported in Table IX, it appears that Samples B and D were the least damaged by light. These formulas differed from Samples A, C and E by having hydroxyethyl urea present. It is evident that the hydroxyethyl urea performed a color stabilizing function.